PATENT

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: DIEHL et al.

Application: **IMPLEMENTING ENHANCED PROXY ARP FOR VIRTUAL IP ADDRESSES** (As amended)

Serial No.: 10/650,538

Filing Date: August 28, 2003

Art Unit: 2144

Examiner: Scott B. Christensen

Case: ROC920030133US1

APPEAL BRIEF FOR APPLICANTS

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APPEAL BRIEF FOR APPLICANTS

Sir:

This is an appeal of the final rejections of all the claims 1-4 and 7-18 in the office action made final and mailed June 26, 2008. For the reasons set forth below, it is submitted that the Board should reverse the final rejections of claims 1-4 and 7-18.

(1) REAL PARTY IN INTEREST

The real party of interest is International Business Machines Corporation.

(2) RELATED APPEALS AND INTERFERENCES

Applicants' attorney knows of no other appeals or interferences that would have a bearing on the Board's decision in the present appeal.

(3) STATUS OF CLAIMS

Claims 1-4 and 7-18 have been finally rejected under 35 U.S.C. § 103(a) in an office action mailed June 26, 2008. The rejection of each of the claims 1-4 and 7-18 has been appealed. Claims 5 and 6 have been canceled.

(4) STATUS OF AMENDMENTS

No amendment was filed after the final rejection.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention as recited by independent claims 1, 8, and 13 and representative separately patentable dependant claims 2, and 15, can best be appreciated and understood with reference to the patent specification (hereinafter page p., line l.)

The present invention is an admittedly novel method, apparatus and computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses. (p. 3, l. 24 - p. 4, l. 1)

Independent claim 1 recites a method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses comprising the steps of: (p. 3, l. 24 - p. 4, l. 1)

identifying a Virtual Internet protocol (IP) interface requiring proxy ARP; (p. 5, l. 20-32, p. 6, l. 21-32, FIG. 1, FIG. 2, block 200, 202)

dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet; (p. 6, l. 12-32 FIG. 2, block 204, 206)

adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical adapter for said selected proxy agent; (p. 6, l. 33 - p. 7, l. 5 FIG. 2, block 208)

utilizing said physical adapter for said selected proxy agent, and broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent; (p. 7, l. 6-15 FIG. 2, block 212)

responsive to failure of said selected proxy agent, dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code; (p. 6, l. 14-20, FIG. 2, block 204, 206) and

wherein dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface includes checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address. (p. 6, l. 14-20, FIG. 2, block 204, 206)

Dependent claim 2 recites a method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as

recited in claim 1 further includes identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent. (p. 7, l. 16- 28, FIG. 3 block 304, 306, 308, 310)

Independent claim 8 recites apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses comprising: (p. 3, l. 24 - p. 4, l. 1)

a local network; (p. 5, l. 1-4, FIG. 1, local 10.1.1.x network 104)

a server computer having a Virtual Internet protocol (IP) address, a Virtual Internet protocol (IP) interface, and a plurality of physical adapters connecting said server computer to said local network, (p. 5, l. 1-4, l, 14-19, FIG. 1, server computer 100)

a Transmission Control Protocol/Internet Protocol (TCP/IP) code for dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said Transmission Control Protocol/Internet Protocol (TCP/IP) code being responsive to failure of said selected proxy agent, dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code including checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet; said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address; (p. 5, l. 20-32, p. 6, l. 12-20, FIG. 1, TCP/IP code 124, (p. 6, l. 12-32 FIG. 2, block 204,

206)

a proxy ARP for Virtual IP interface initiation task for adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated one of said physical adapters for said selected proxy agent; and for utilizing said physical adapter for said selected proxy agent for broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent (p. 5, l. 20-32; FIG. 1, p. 6, l. 12-32, p. 6, l. 33 - p. 7, l. 5 FIG. 2, block 208)

Independent claim 13 recites a computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses in a server computer, said computer program product including a computer recording medium for storing program means, and that said program means, when executed by the server computer ~~to~~ cause the server computer to perform the steps of: (p. 3, l. 24 - p. 4, l. 1)

identifying a Virtual Internet protocol (IP) interface requiring proxy ARP; (p. 5, l. 20-32, p. 6, l. 21-32, FIG. 1, FIG. 2, block 200, 202)

dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet; (p. 6, l. 12-32 FIG. 2, block 204, 206)

adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical adapter for said selected proxy agent; (p. 6, l. 33 - p. 7, l. 5 FIG. 2, block 208)

utilizing said physical adapter for said selected proxy agent, and broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent; (p. 7, l. 6-15 FIG. 2, block 212)

responsive to failure of said selected proxy agent, dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code; (p. 6, l. 14-20, FIG. 2, block 204, 206) and

wherein dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface includes checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address. (p. 6, l. 14-20, FIG. 2, block 204, 206)

Dependent claim 15 further defines claim 13 including the steps of identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent; and setting an associated local IP address of said selected proxy agent in said Virtual Internet protocol (IP) interface to complete activation for said Virtual Internet protocol (IP) interface. (p. 7, l. 16- 28, FIG. 3 block 304, 306, 308, 310)

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The single ground of rejection presented for review is the rejection of claims 1-4, and 7-18 under 35 USC §103(a) as being unpatentable over Lee, U.S. patent 7,088,689 in view of Kirchner et al., U.S. patent 6,263,370 and Smyk, U.S. patent 6,289,001.

(7) ARGUMENT

A. INTRODUCTION

Applicants respectfully submit that the Examiner's rejections of all pending claims 1-4, and 7-18 under 35 U.S.C. § 103(a) should be reversed because the subject matter of each of the independent claims 1,8, and 13 and the representative dependant claims 2, and 15 is patentable over all the references of record. There is no teaching or suggestion in any of the cited references, individually or taken as a whole, to make the claimed invention obvious. The rejections of all of the pending claims 1-4, and 7-18 under 35 U.S.C. §103(a) are improper and should be reversed.

B. THE SCOPE AND CONTENT OF THE PRIOR ART

Lee, U.S. patent 7,088,689 discloses a virtual local area network(VLAN) data switching method uses an address resolution protocol(ARP) packet in VLAN constructed with one internet protocol(IP) subnet. This is achieved by making a source host broadcast an ARP request packet, making a Proxy ARP server prepare to transmit a virtual ARP request packet wherein the Proxy ARP server receives the ARP request packet, and making a destination host transmit an ARP response packet in direct to the

source host through a switching unit wherein the destination host receives the virtual ARP request packet. Data transfer delay time for the data exchanged between different VLANs as well as the router load occurring in handling the traffic between VLANs are reduced, so that data handling performance for high-capacity multimedia data transferred on VLANs is improved. Column 2, lines 19-25 states:

An object of the present invention is to provide a VLAN data switching method using ARP packets which enable routing procedures to be minimized, which occurs when transferring data between different VLANs in a VLAN environment constructed with one IP subnet, by employing virtual ARP requests to achieve a direct switching operation by a switch.

Column 2, lines 45-54 states:

In another aspect of the present invention, a VLAN data switching method using an ARP packet includes the steps of making a source host broadcast an ARP request packet, making a Proxy ARP server prepare to transmit a virtual ARP request packet wherein the Proxy ARP server receives the ARP request packet, and making a destination host transmit an ARP response packet directly to the source host through a switching unit wherein the destination host receives the virtual ARP request packet.

Column 3, lines 34-41 states:

Moreover, the ARP recognizes a MAC address of a destination host or of a gateway using a broadcasting for the IP address of the destination. A collected IP address and the corresponding MAC address are stored in a memory(i.e., an ARP cache) of each IP host in a table form so as to be used for a next packet transmission procedure. Therefore, the ARP always checks the ARP cache for the IP address and MAC address prior to requesting the MAC address.

Column 3, line 66 through column 4, line 12 states:

In this case, the Proxy ARP server 10a stores a source A of an inter-LAN data, and an IP address and a MAC address of a destination host B, generates a virtual ARP request packet including IP and MAC addresses of the destination host A, and transmits the virtual ARP request packet to the destination host B, whereby the destination host B receiving the corresponding packet enables the ARP request packet to be transferred directly to the source host A. Namely, the ARP request packet is transferred by a switching of two adjacent layers through the Proxy ARP server 10a and the switching unit 20. In this case, the Proxy ARP server 10a includes a MAC table(not shown in the

drawings) storing the MAC and IP addresses for the hosts belonging to the respective VLANs.

Kirchner et al., U.S. patent 6,263,370 discloses a TCP/IP-based client-server interface for sending service requests from a client computer to a Network Information Distribution Services server. The TCP/IP-based client-server interface is an easily implemented and economical alternative to the proprietary UDP/IP-based client-server interface developed for communication between client computers and Network Information Distribution Services servers. A service request is sent to a specific TCP/IP logical port associated with a particular type of service. A process associated with the specific TCP/IP logical port formats the request in the same manner as requests received through the proprietary UDP/IP-based client-server interface are formatted, and then directs the formatted requests to the Network Information Distribution Services server process that executes the requests. Column 10, lines 22-43 states:

FIG. 8 displays the flow of messages through the various internal interfaces of the TCP/IP-based client-server interface. Comparison of FIGS. 7 and 8 reveals the markedly different sequencing and flow of messages between clients and NIDS servers using the NSPP-based client-server interface and clients and servers using the TCP/IP-based client-server interface. A first difference is that, in order to make a connection to a specific NIDS service and to request execution of an operation by that service, a client using the TCP/IP-based client-server interface needs to send only two requests. The first request is a standard TCP/IP connection request 801. The client application calls the NIDS API 802 to make the connection. The NIDS API calls a well-known TCP/IP function 803 to establish a connection with the logical port on the NIDS server that corresponds to the service requested through the NIDS API. The client's TCP/IP socket transmits the TCP/IP connection request to the server's TCP/IP logical port corresponding to the NIDS service to which the client wishes to connect 804. The TCP/IP socket corresponding to that logical port passes the message to the NIDSCOM process associated with the service 805. The NIDSCOM process then conducts a dialog with the NIDS process on the NIDS server that handles the UDP/IP-based NSPP interface. This is the same NIDS process that executes the first two requests in FIG. 7. In fact, the NIDSCOM serves as a proxy or agent on the NIDS server for the client. The NIDSCOM process executes the same open_session and pick_request requests 806-

809 made by a client under the NSPP-based client-server interface shown in FIG. 7

Smyk, U.S. patent 6,289,001 discloses asynchronous transfer mode ("ATM") proxy signaling methods and apparatus that provide ATM signaling reliability. A plurality of proxy agents are connected to a ATM switch. The ATM switch proxy agents are connected via SVCs established under the control of a proxy agent selector. The proxy agent selector identifies an alternative proxy agents should one or more of the other proxy agents fail. Upon failure of one or more proxy agents, under the control of timing operations within the controller of the switch, the proxy agent selector selects one or more alternative proxy agents. In this manner, proxy agent signaling continues to a ATM switch undisturbed.

C. THE REJECTION OF CLAIMS 1-4, and 7-18 UNDER 35 USC 103 SHOULD BE REVERSED

The Board should reverse the rejection of the claims 1-4, and 7-18 under 35 USC §103(b) as being unpatentable over Lee, U.S. patent 7,088,689 in view of Kirchner et al., U.S. patent 6,263,370 and Smyk, U.S. patent 6,289,001

The present invention overcomes a problem of a Virtual IP Address (VIPA) on a server TCP/IP introduced by International Business Machines Corporation that has been used on some server computers, such as an iSeries server manufactured and sold by International Business Machines Corporation. A VIPA is configured generally the same as a normal IP address for a physical adapter, except that it is not associated with any particular device. To an attached router, the TCP stack on the server computer looks like another router. When the TCP stack receives a packet destined for

one of its VIPAs, the inbound IP function of the TCP stack notes that the IP address of the packet is in the TCP stack's home list of IP addresses and forwards the packet up the TCP stack. The home list of a TCP stack is the list of IP addresses that are owned by the TCP stack. Assuming the TCP stack has multiple adapters or paths to it, if a particular physical adapter fails, the attached routing network will route VIPA-targeted packets to the TCP stack via an alternate route. The VIPA may, thus, be thought of as an address to the stack, and not to any particular adapter. However, a problem remains because the Virtual IP addresses are not directly routable. In other words, the iSeries server will never answer an ARP request destined to Virtual IP address. That is why the local gateways or routers needed explicit routes configured in order to forward packets to the Virtual IP interface. But, the downside is that configuring these same additional explicit routes configured in order to forward packets to the Virtual IP interface in each locally attached client is cumbersome at best, and impractical at worst. The local clients could be configured to send all of their data to the routers, but that just adds unnecessary traffic to the router. Or the local clients could access the iSeries server using one of the physical IP addresses, but if the adapter on which that IP address is defined goes down, the iSeries server appears down to the client. The net result that, for locally attached clients, the fault tolerance, high availability advantages of Virtual IP are not available.

Claim 1 is patentable

35 U.S.C. §103 requires that the invention as claimed be considered "as a whole" when considering whether the invention would have been obvious when it was made. Graham v. John Deere, 383 U.S. 1, 148 USPQ 459, 472 (1966). It is applicants' claimed invention which must be considered as a whole pursuant to 35 U.S.C. §103, and failure to consider the claimed invention as a whole is an error of law. The legal determination under section 103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made.

Independent claim 1 recites a method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses.

Independent claim1 recites the steps of identifying a Virtual Internet protocol (IP) interface requiring proxy ARP, dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet; adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical adapter for said selected proxy agent; and utilizing said physical adapter for said selected proxy agent, broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent, responsive to failure of said selected proxy agent; dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code; and wherein dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface

includes checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface.

Only applicants teach the subject matter of the invention, as recited by pending independent claim 1. The invention as claimed must be considered "as a whole" when considering whether the invention would have been obvious when it was made. The prior art references of record provide no teaching, suggestion or inference in the prior art as a whole or knowledge generally available to one having ordinary skill in the art to achieve the claimed invention.

The subject matter of the invention and recited steps of independent claim 1 are not shown or disclosed, nor suggested in the references of record including Lee, Kirchner, and Smyk. The Lee patent discloses a VLAN data switching method using ARP packet. Lee does not show nor suggest identifying a Virtual Internet protocol (IP) interface requiring proxy ARP, as taught and claimed by Applicants.

This proxy ARP for Virtual IP interfaces, as taught and claimed by Applicants, provides customers with an increased fault tolerance, and higher system availability. A new “Proxy ARP Yes/No” option is presented when a Virtual IP interface is configured. This option defaults off to prevent existing configurations from breaking upon upgrading the new support feature in accordance with the preferred embodiment. When this new enhanced Proxy ARP option is enabled, the Transmission Control Protocol/Internet Protocol (TCP/IP) code answers ARP requests to the Virtual IP address (VIPA).

Lee, Kirchner and Smyk do not teach or suggest dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said selected proxy agent and said

Virtual Internet protocol (IP) interface being in a same subnet; adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical adapter for said selected proxy agent; and utilizing said physical adapter for said selected proxy agent, and broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent, as taught by Applicants and recited in independent claim 1.

The Examiner acknowledges that Lee does not disclose responsive to failure of the selected proxy agent, dynamically selecting a new proxy agent for the Virtual Internet protocol interface by TCP/IP code. Applicants teach this new support feature that is added to a server computer to allow Virtual IP addresses to be configured as directly routable. The Examiner acknowledges that Lee does not disclose providing TCP/IP code for dynamically selecting the proxy agent. Applicants respectfully submit that the additional cited references of record including Kirchner and Smyk add nothing to suggest the method of the invention, as recited in independent claim 1.

Applicants respectfully that independent claim 1 is patentable over all the references of record. The total teachings of the cited references fail to render obvious the subject matter of the present invention as recited in independent claim 1.

Thus, independent claim 1 is patentable.

In order for there to be a prima facie showing of obviousness under 35 U.S.C. §103, it is necessary that the references being combined in an attempt to demonstrate prima facie obviousness must themselves suggest the proposed combination. For a

combination of prior art references to render an invention obvious, "[t]here must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination." In re Oetiker, 977 F.2d 1443, 1447, 24 USPQ2D 1443, 1446 (Fed. Cir. 1992). It is insufficient to establish obviousness that the separate elements of the invention existed in the prior art, absent some teaching or suggestion, in the prior art, to combine the elements. Arkie Lures, Inc. v. Gene Larew Tackle, Inc., 119 F.3d 953, 957, 43 USPQ2d 1294, 1297 (Fed. Cir. 1997).

The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). Hindsight in impermissible when an examiner rejects an application in reliance upon teachings not drawn from any prior art disclosure, but from the applicant's own disclosure. In re Dembiczak, 175 F.3d 994, 998, 50 USPQ2d 1614, 1616 (Fed. Cir. 1999). Broad conclusory statements standing alone are not "evidence." Id.

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See In re Young, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991).

The ultimate determination of whether an invention would have been obvious under 35 USC § 103(a) is a legal conclusion based on underlying findings of fact. In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). The claimed

invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

In a proper obviousness determination, "whether the changes from the prior art are 'minor', . . . the changes must be evaluated in terms of the whole invention, including whether the prior art provides any teaching or suggestion to one of ordinary skill in the art to make the changes that would produce the patentee's . . . device." This includes what could be characterized as simple changes, as in In re Gordon and Sutherland, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1983) (Although a prior art device could have been turned upside down, that did not make the modification obvious unless the prior art fairly suggested the desirability of turning the device upside down.).

The total teachings of Lee, Kirchner, and Smyk provide no motivation, suggestion or teaching to support the Examiner's proposed modification to provide the recited method of claim 1, as taught and claimed by Applicants.

Applicants respectfully submit that the claimed subject matter of independent claim 1 is novel and is not rendered obvious by the references of record.

The total teachings of the references of record including Lee, Kirchner, and Smyk, considered together in combination, do not provide any remote suggestion that said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address. Only Applicants teach that said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address.

As defined in the IBM Dictionary of Computing, a subnet in TCP/IP is a part of a network that is identified by a portion of the Internet address. The address to all nodes in a subnet starts with the same binary sequence.

Claims should be given their broadest reasonable interpretation consistent with the specification. The claim language itself governs its meaning. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). The meaning of claim language is construed according to its usage and context. ResQNet.com, Inc. v. Lansa, Inc., 346 F.3d 1374, 1378 (Fed. Cir. 2003). The touchstone for discerning the usage of claim language is the understanding of those terms among artisans of ordinary skill in the relevant art at the time of invention. See Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed. Cir. 2001). Indeed, normal rules of usage create a "heavy presumption" that claim terms carry their accustomed meaning in the relevant community at the relevant time. CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citing Johnson Worldwide Assocs., Inc. v. Zebco Corp., 175 F.3d 985, 989 (Fed. Cir. 1999)). The best source for discerning the proper context of claim terms is the patent specification wherein the patent applicant describes the invention. In addition to providing contemporaneous technological context for defining claim terms, the patent applicant may also define a claim term in the specification "in a manner inconsistent with its ordinary meaning." Boehringer Ingelheim Vetmedica, Inc. v. Schering-Plough Corp., 320 F.3d 1339, 1347 (Fed. Cir. 2003) (citing Teleflex, 299 F.3d at 1325-26). Dictionaries, encyclopedias and treatises are particularly useful resources

to assist in determining the ordinary and customary meanings of claim terms. Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1202 (Fed. Cir. 2002).

The prior art of record provides no teaching, suggestion or inference in the prior art as a whole or knowledge generally available to one having ordinary skill in the art to achieve the claimed invention, when the invention as claimed is considered "as a whole" as required by 35 U.S.C. § 103 when considering whether the invention would have been obvious when it was made. Graham v. John Deere, 383 U.S. 1, 148 USPQ 459, 472 (1966).

In the words of the Court of Appeals for the Federal Circuit, "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re John R. Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780 (Fed. Cir. 1992). See In re Gordon and Sutherland, 733 F.2d 900, 221 USPQ 1125, 1127 (Fed. Cir. 1984), Carl Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 787, 218 USPQ 698, 702 (Fed. Cir. 1983), and In re Sernaker, 702 F.2d 989, 995-96, 217 USPQ 1, 6-7 (Fed. Cir. 1983).

Applicant respectfully submits that the prior art descriptions of Lee, Kirchner, and Smyk falls short of applicant's invention, and the subject matter of the claimed invention as recited in claim 1 would not have been obvious to one of ordinary skill in the art.

Thus, independent claim 1 is patentable.

Claim 2 is patentable

Dependent claim 2 is patentable for the same reasons as claim 1. Dependent claim 2 further recites the steps identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent.

The references of record do not suggest the subject matter of the invention as recited by claim 2. In Re Fritch 972 F.2d at 1266, 23 USPQ2d at 1780 (Fed. Cir. 1992), states: "[I]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. ... This court has previously stated that '[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." Applicants respectfully submit that the total teaching of Lee, Kirchner, and Smyk would not achieve the claimed invention as recited by claim 2.

Lee, Kirchner, and Smyk considering the total teachings, fail to suggest identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent as required by dependent claim 2.

Applicant respectfully submits that no teaching or motivation exists for one of ordinary skill in the art to modify the prior art description of Lee, Kirchner, and Smyk to achieve the subject matter of the claimed invention as recited in claim 2. Only with the

use of applicant's own disclosure, rather than relying upon teachings drawn from any prior art disclosure, would the prior art be modified in the manner suggested by the Examiner. The claimed invention is not rendered obvious by the mere fact that the prior art could be modified in the manner suggested by the Examiner. The prior art fails to suggest the desirability of the modification. Lee, Kirchner, and Smyk provide no teaching, suggestion, or motivation and no general knowledge in the art exists to achieve the subject matter of the invention, as claimed by Applicants in dependent claim 2.

Thus, dependent claim 2 is patentable.

Claim 8 is patentable

Independent claim 8 recites apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses comprising: a local network; a server computer having a Virtual Internet protocol (IP) address, a Virtual Internet protocol (IP) interface, and a plurality of physical adapters connecting said server computer to said local network, a Transmission Control Protocol/Internet Protocol (TCP/IP) code for dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said Transmission Control Protocol/Internet Protocol (TCP/IP) code being responsive to failure of said selected proxy agent; for dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code including checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet; said same

subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address; a proxy ARP for Virtual IP interface initiation task for adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated one of said physical adapters for said selected proxy agent; and for utilizing said physical adapter for said selected proxy agent for broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent;

The claimed features and limitations defined by claim 8 are not shown nor suggested in total combination of the references of record. Claim 8 is further patentable over the references of record.

The present invention as taught and claimed in independent claim 8 recites that the proxy agent is dynamically selected by the TCP/IP stack code. This feature is not disclosed, nor suggested by the references of record. An advantage of dynamically selecting the proxy agent by the TCP/IP stack code is so the proxy agent interface is dynamic. If the interface that is currently acting as the proxy agent for a Virtual IP interface goes down, the agent function is immediately moved to an alternate interface, if one exists, so that the Virtual IP address remains accessible to local and remote clients. Thus, with this new support feature of dynamically selecting the proxy agent by the TCP/IP stack code allows Virtual IP addresses to be configured as directly routable. This directly routable configuration allows the iSeries server to answer ARP requests, that is, to Proxy ARP, for Virtual IP addresses. Proxy ARP for Virtual IP interfaces provides customers with an increased fault tolerance, and higher system availability.

Lee, Kirchner, and Smyk do not teach or suggest, the proxy ARP or Virtual IP interface initiation task for adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated one of said physical adapters for said selected proxy agent; and for utilizing said physical adapter for said selected proxy agent for broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent, as recited in independent claim 8.

Applicants respectfully submit that the cited references of record including Lee, Kirchner, and Smyk fail to suggest the apparatus of the invention, as recited in independent claim 8, as presented.

Thus, independent claim 8 is patentable.

The rejection of the claim 8 under 35 USC §103 is incorrect and should be reversed.

Claim 13 is patentable

Independent claim 13 recites a computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses in a server computer, said computer program product including instructions stored on a computer recording medium, wherein said instructions, when executed by the server computer to cause the server computer to perform the steps of: identifying a Virtual Internet protocol (IP) interface requiring proxy ARP; dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical

adapter for said selected proxy agent; utilizing said physical adapter for said selected proxy agent, and broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent, responsive to failure of said selected proxy agent; dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code; and wherein dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface includes checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface..

Independent claim 13 recites that said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address; and the computer program product is patentable for the same reasons as the recited method of independent claim 1. Only applicants teach the recited steps of independent claim 13.

Thus, independent claim 13 is patentable.

The rejection of the claim 13 under 35 USC §103 is incorrect and should be reversed.

Claim 15 is patentable

Dependent claim 15 is patentable for the same reasons as claim 1. Dependent claim 15 further defines the computer program product of claim 13 including the steps of identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected

proxy agent; and setting an associated local IP address of said selected proxy agent in said Virtual Internet protocol (IP) interface to complete activation for said Virtual Internet protocol (IP) interface.

The references of record do not suggest the subject matter of the invention as recited by claim 15. Lee, Kirchner, and Smyk considering the total teachings in combination, fail to suggest enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent; and setting an associated local IP address of said selected proxy agent in said Virtual Internet protocol (IP) interface to complete activation for said Virtual Internet protocol (IP) interface.

The claimed features and limitations defined by claim 15 are not shown nor suggested in total combination of the references of record. Claim 15 is further patentable over the references of record.

The rejection of the claim 15 under 35 USC §103 is incorrect and should be reversed.

Dependent claim 15 is patentable.

D. CONCLUSION

Claims 1-4 and 7-18 are patentable over all the references of record and are not rendered obvious by the prior art. Each of the claims 1-4 and 7-18 is patentable and the Examiner's rejections should be reversed.

It is respectfully requested that the final rejection be reversed.

Respectfully submitted,

S-signature by

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November 26, 2008

(8) CLAIMS APPENDIX

CLAIMS ON APPEAL

1. A method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses comprising the steps of:

identifying a Virtual Internet protocol (IP) interface requiring proxy ARP;

dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet;

adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical adapter for said selected proxy agent;

utilizing said physical adapter for said selected proxy agent, and broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent;

responsive to failure of said selected proxy agent, dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code; and

wherein dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface includes checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address.

2. A method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 1 further includes identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent.

3. A method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 1 further includes setting an associated local IP address of said selected proxy agent in said Virtual Internet protocol (IP) interface.

4. A method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 1 wherein the step of dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface includes providing Transmission Control Protocol/Internet Protocol (TCP/IP) code for dynamically selecting said proxy agent.

7. A method for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 1 further includes answering ARP requests for Virtual Internet protocol (IP) addresses with Transmission Control Protocol/Internet Protocol (TCP/IP) code for said selected proxy agent for said Virtual Internet protocol (IP) interface.

8. Apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses comprising:

a local network;

a server computer having a Virtual Internet protocol (IP) address, a Virtual Internet protocol (IP) interface, and a plurality of physical adapters connecting said server computer to said local network,

a Transmission Control Protocol/Internet Protocol (TCP/IP) code for dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said Transmission Control Protocol/Internet Protocol (TCP/IP) code being responsive to failure of said selected proxy agent, dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code including checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet; said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address;

a proxy ARP for Virtual IP interface initiation task for adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated one of said physical adapters for said selected proxy agent; and for utilizing said physical adapter for said selected proxy agent for broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent.

9. Apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) as recited in claim 8 wherein said TCP/IP code is responsive to a failure of said

physical adapter for said selected proxy agent, for dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface.

10. Apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) as recited in claim 8 wherein said TCP/IP code answers ARP requests to said Virtual Internet protocol (IP) address; said ARP requests being provided without a parameter defining an associated local interface being specified with said ARP requests to said Virtual Internet protocol (IP) address.

11. Apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) as recited in claim 8 includes a input/output processor (IOP) response handler task for identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and for continuing activation for said Virtual Internet protocol (IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent.

12. Apparatus for implementing enhanced proxy Address Resolution Protocol (ARP) as recited in claim 11 wherein said IOP response handler task is adapted for setting an associated local IP address of said selected proxy agent in said Virtual Internet protocol (IP) interface to complete activation for said Virtual Internet protocol (IP) interface.

13. A computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses in a server computer, said computer program product including a computer recording medium for storing program means, and that said program means, when executed by the server

computer cause the server computer to perform the steps of:

identifying a Virtual Internet protocol (IP) interface requiring proxy ARP;

dynamically selecting a proxy agent for said Virtual Internet protocol (IP) interface; said selected proxy agent and said Virtual Internet protocol (IP) interface being in a same subnet;

adding an IP address for said Virtual Internet protocol (IP) interface to an address list of an associated physical adapter for said selected proxy agent;

utilizing said physical adapter for said selected proxy agent, and broadcasting said added IP address for said Virtual Internet protocol (IP) interface with a media access control (MAC) address of said associated physical adapter for said selected proxy agent;

responsive to failure of said selected proxy agent, dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface by Transmission Control Protocol/Internet Protocol (TCP/IP) code; and

wherein dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface includes checking for a proxy agent in the same subnet as said Virtual Internet protocol (IP) interface; said same subnet being identified by a portion of a Transmission Control Protocol/Internet Protocol (TCP/IP) Internet address.

14. A computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 13 further includes the step of identifying a broadcast ARP response for said Virtual Internet protocol (IP) interface, and continuing activation for said Virtual Internet protocol

(IP) interface including enqueuing said Virtual Internet protocol (IP) interface to a proxy list of said selected proxy agent.

15. A computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 14 further includes the step of setting an associated local IP address of said selected proxy agent in said Virtual Internet protocol (IP) interface to complete activation for said Virtual Internet protocol (IP) interface.

16. A computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 13 wherein Transmission Control Protocol/Internet Protocol (TCP/IP) code is used for the step of dynamically selecting said proxy agent for said Virtual Internet protocol (IP) interface.

17. A computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 16 wherein said Transmission Control Protocol/Internet Protocol (TCP/IP) code is responsive to a failure of said physical adapter for said selected proxy agent, for dynamically selecting a new proxy agent for said Virtual Internet protocol (IP) interface.

18. A computer program product for implementing enhanced proxy Address Resolution Protocol (ARP) for Virtual Internet protocol (IP) addresses as recited in claim 16 wherein said Transmission Control Protocol/Internet Protocol (TCP/IP) code utilizes said physical adapter for said selected proxy agent for answering ARP requests to said Virtual Internet protocol (IP) address; said ARP requests being provided without a

parameter defining an associated local interface being specified with said ARP requests to said Virtual Internet protocol (IP) address.

(9) EVIDENCE APPENDIX

None.

(10) RELATED PROCEEDINGS APPENDIX

None.